

Claims

1. Liquid distributor for two liquid phases to be distributed uniformly into a plurality of tubes of an upright tube-bundle reactor for carrying out chemical reactions, wherein the tubes are retained at the top and bottom by tubesheets and closed against the outside of the tube, and wherein a distribution chamber is arranged above the upper tubesheet, which chamber contains feed pipes for two different liquids and at least one gas phase;
characterised in that
 - a first liquid distribution system (6, 20) is arranged above the tubesheet or on it,
 - which system is connected to at least one outer feed device (23), and contains a weir (25), installed outside the tubed area, with openings (26) at the bottom and a plurality of inlet sleeves (1),
 - wherein one inlet sleeve (1) is assigned at the top to each of the tubes in the tube bundle, the inlet sleeves (1) are of tubular design and are vertically aligned, and the said sleeves have at least one lateral (5) and one further opening (2) located above the tubesheet and are open at the bottom facing each assigned tube in the tube bundle (3), and
 - a second liquid distribution system (12, 15) is arranged above the first liquid distribution system (6, 20),
 - which system is connected to at least one other outer feed device (27) and contains one upper and one lower distribution tray (15),
 - wherein the lower distribution tray (15) contains a plurality of openings (17) which are arranged flush above the inlet sleeves of the first liquid distribution system (6, 20), and exhibits at least one device for setting a uniform liquid level above the openings,
 - wherein the upper distribution tray (12) is connected to the feed device (27) for liquid, and contains a plurality of overflow weirs (14) or plate holes (29) from which the liquid is able to discharge into the lower distribution tray (15), and wherein each of the

overflow weirs (14) is assigned to a plurality of openings in the lower distribution tray.

2. Liquid distributor according to Claim 1,
5 characterised in that the inlet sleeves (1) exhibit at least one lower, smaller lateral hole, and at least one higher, larger lateral hole.
3. Liquid distributor according to Claim 1,
10 characterised in that the inlet sleeves exhibit at least one lateral notch through which liquid is able to flow from the tubesheet into the inside of the tube.
4. Liquid distributor according to Claim 3,
15 characterised in that wire-shaped flow aids are provided in the notches of the inlet sleeves, down which such aids the liquid is able to run on the inside of the inlet sleeves.
5. Liquid distributor according to one of preceding Claims 1 to 4,
20 characterised in that the upper liquid distribution system (15) rests on the inlet sleeves (1) of the lower liquid distribution system.
6. Liquid distributor according to one of preceding Claims 1 to 5,
characterised in that it is dismountable and of modular structure.
- 25 7. Liquid distributor according to Claim 6,
characterised in that the individual parts can be plugged in.
8. Liquid distributor according to one of preceding Claims 1 to 7,
30 characterised in that the overflow weirs (14) of the upper distribution tray (12) of the second liquid distribution system exhibit a serrated shape (13) on its upper edge or lower edge, or both.

9. Liquid distributor according to one of preceding Claims 1 to 8, characterised in that the lower distribution tray is provided with overflow weirs or plate holes, each of which exhibit three outlets offset by 120 degrees, which outlets are each assigned flush to an inlet sleeve.

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10. Liquid distributor according to one of preceding Claims 1 to 9, characterised in that the lower distribution tray is provided with discharge flow aids at its openings.

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11. Liquid distributor according to Claim 1, characterised in that the inlet sleeves are positively connected to the tubesheet and the tubes.

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12. Liquid distributor according to one of preceding Claims 1 or 2, characterised in that the inlet sleeves are rolled into the tube ends.

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